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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,259	04/23/2002	George R. Newkome	0152.00427	9419

7590

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EXAMINER

SHIBUYA, MARK LANCE

ART UNIT

PAPER NUMBER

1639

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/049,259

**Applicant(s)**

NEWKOME, GEORGE R.

**Examiner**

Mark L. Shibuya

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 1-3 and 6-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4 and 5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 April 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/13/03, 12/12/02, 2</u> | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Claims 1-22 are pending. Claims 1-3 and 6-22 are withdrawn. Claims 4 and 5 are examined.

#### ***Election/Restrictions***

2. Applicant's election with traverse of Group II, claims 4 and 5, and the species of iron (Fe), in the reply filed on 9/20/2005 is acknowledged. The traversal is on the ground(s) that examination of all of the claims in a single application would promote efficiency of prosecution in the Office because all of the groups of claims relate to a dendritic chemistry and methods of using such chemistry to create energy storage devices.

This is not found persuasive because the Invention of Group I, claims 1-3, drawn to a compound of the formula of claim 1 and methods of making said compound, does not share a technical feature that links the Invention of Group I to the elected Invention of Group II, claims 4 and 5, drawn to making dendrimer frameworks using compounds that are not of the formula of claim 1.

The requirement is still deemed proper and is therefore made FINAL.

#### ***Priority***

3. The instant application is the national stage entry of PCT/US00/40431, filed 20 July 2000, which claims priority from US Provisional Application No. 60/145,785, filed 27 July 1999, but it is improper for the instant application to claim to be both a national stage entry under 35 USC § 371 and a continuation-in-part, under 35 USC §§ 111 and 120. Therefore, priority to 09/646,737, filed 11/22/2000, is not granted.

***Information Disclosure Statement***

4. The information disclosure statements filed 2/7/2003, 1/13/2003 and 12/12/2002 fail to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 for the following reasons:

The reference of Barnes et al., (IDS filed 2/7/2003), does not provide a date. Also the issue number is wrong.

Applicant has not furnished a copy of the book by Krummenacker et al., as cited in IDS filed 2/7/2003. If applicant does not furnish particular page numbers in a citation, a copy of the entire volume is required.

Applicant has not furnished a copy of the book by Gilbert et al., (Yen et al.?) as cited in IDS filed 2/7/2003. If applicant does not furnish particular page numbers in a citation, a copy of the entire volume is required.

The copy furnished of Newkome et al., "Cascade Infrastructure Modification via Integration of Application-Based Monomers", (IDS filed 1/13/2003), does not provide any citation information.

Applicant has not furnished a copy of the book by Fendler, JH et al., as cited in IDS filed 1/13/2003. If applicant does not furnish particular page numbers in a citation, a copy of the entire volume is required.

The copy of Luryi, S. et al., does not match the citation on IDS filed 1/13/2003, particularly in that p. 323 is not furnished, and there is no indication that it is from the journal "Science".

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Applicant has not furnished a copy of Xu, Z. et al., pp. 69-104, as cited in IDS filed 1/13/2003.

The copy furnished of Xu et al., "Stiff Dendritic Macromolecules: Extending Small-Molecule Organic Chemistry to the Nanoscale Regime, (IDS filed 1/13/2003), does not provide any citation information.

Applicant has not furnished a copy of the book by Cisak et al., as cited in IDS filed 12/12/2002. If applicant does not furnish particular page numbers in a citation, a copy of the entire volume is required.

Applicant has not furnished a copy of Hult, A. et al., as cited in IDS filed 12/12/2002.

The copy furnished of Lipkowski et al., does not provide complete copies of chapters 2 and 3.

The copy furnished of McMurry et al., does not provide complete the complete reference (IDS filed 12/12/2002).

The copy furnished of Narayanan et al., (IDS filed 12/12/2002), does not provide any citation information.

Applicant has not furnished a copy of the book by NEWKOME ET AL., DENDRIMERS AND DENDRON CONCEPTS, SYNTHESIS, APPLICATION; as cited in IDS filed 12/12/2002. If applicant does not furnish particular page numbers in a citation, a copy of the entire volume is required.

The copy furnished of Roovers et al., does not provide complete the complete reference (IDS filed 12/12/2002).

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The information disclosure statements have been placed in the application file, but the information referred to therein, *as pertaining to the publications named above*, has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

### ***Drawings***

5. The replacement drawing of Figure 10 was received on 4/23/2002. This drawing is unacceptable because the replacement drawing sheet has not been identified in the top margin as "Replacement Sheet" (37 CFR 1.121(d)) and does not include all of the figures appearing on the immediate prior version of the sheet, even though only one figure appears to be amended (see below). The examiner respectfully requests that applicant point to any changes made in replacement Figure 10, and to where in specification, as filed, support may be found for any such changes made in replacement Figure 10.

## **INFORMATION ON HOW TO EFFECT DRAWING CHANGES**

### **Replacement Drawing Sheets**

Drawing changes must be made by presenting replacement figures which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments, or remarks,

section of the amendment. ***Any replacement drawing sheet must be identified in the top margin as “Replacement Sheet” (37 CFR 1.121(d)) and include all of the figures appearing on the immediate prior version of the sheet, even though only one figure may be amended.*** The figure or figure number of the amended drawing(s) must not be labeled as “amended.” If the changes to the drawing figure(s) are not accepted by the examiner, applicant will be notified of any required corrective action in the next Office action. No further drawing submission will be required, unless applicant is notified.

Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin.

## Annotated Drawing Sheets

A marked-up copy of any amended drawing figure, including annotations indicating the changes made, may be submitted or required by the examiner. The annotated drawing sheets must be clearly labeled as “Annotated Marked-up Drawings” and accompany the replacement sheets.

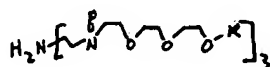
## Timing of Corrections

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.85(a). Failure to take corrective action within the set period will result in ABANDONMENT of the application.

If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings **MUST** be filed within the **THREE MONTH** shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may **NOT** be obtained under the provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability.

## Specification

6. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claim 4 depicts the following hand drawn structure:



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The specification does not appear to disclose said structure.

7. There does not appear to be support for the amendments to the specification, filed 4/23/2002 at p. 5 of the instant application ("wherein X is an integer from 1 to -3-"). Applicant points to three branching structures, as depicted in compounds 29 and 33 of Figure 3, and in Figure 4, compound 36. However, there does not appear to be a depiction of compounds 29 and 33 of Figure 3, or if these compounds are depicted, the illustrations are so dark as to preclude providing support for said amendment to the specification. Compound 36 of Figure 4 does provide support for X=3, but does not provide support for X=2, which is included in the proposed amended range of X as an integer from 1-3.

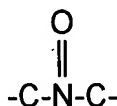
### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claim 4 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 4 recites a chemical compound that comprises the structure:





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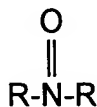
However, there is insufficient guidance as to how to make and use this chemical structure in a method of making dendrimer frameworks. There are many factors be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether undue experiment is necessitated. These factors can include, but are not limited to:

- (1) the breadth of the claims;
- (2) the nature of the invention;
- (3) the state of the prior art;
- (4) the relative skill of those in the art;
- (5) the level of predictability in the art;
- (6) the amount of direction provided by the inventor;
- (7) the existence of working examples; and
- (8) the quantity of experimentation needed to make or use the invention based on the content of the disclosure.

In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988).

(1 and 2) The breadth of the claims and the nature of the invention: Claim 4 is drawn to a method of making a dendrimer comprising the structure in question.

(3 and 5) The state of the prior art and the level of predictability in the art: The prior art of ROBERTS AND CASERIO, BASIC PRINCIPLES OF ORGANIC CHEMISTRY, 687 (1<sup>st</sup> ed. 1964) teaches nitroso compounds of the formula R-N=O, but do not teach the structure:



(4) The level of one or ordinary skill: The level of skill would be high, most likely at the Ph.D. level. However, such persons of ordinary skill in this art, *given its*

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*unpredictability*, would have to engage in undue (non-routine) experimentation to carry out the invention as claimed.

(6-7) The amount of direction provided by the inventor and the existence of working examples: The specification does not disclose the structure in question, other than in the claims.

(8) The quantity of experimentation needed to make or use the invention based on the content of the disclosure: The instant specification does not provide to one skilled in the art a reasonable amount of guidance with respect to the direction in which the experimentation should proceed in carrying out the claimed methods. Note that there must be sufficient disclosure, either through illustrative examples or terminology, to teach those of ordinary skill how to make and use the invention as broadly as it is claimed. *In re Vaeck*, 947 F.2d 488, 496 and n.23, 20 USPQ2d 1438, 1455 and n.23 (Fed. Cir. 1991). Therefore, it is deemed that further research of an unpredictable nature would be necessary to make or use the invention as claimed. Thus, due to the inadequacies of the instant disclosure, undue experimentation would be required of one of ordinary skill in the art to practice the claimed invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 4 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claims 4 and 5 depict hand drawings of chemical structures that are so crude as to be difficult to interpret. For example, it is difficult to determine the position, number and identity of the various atoms in the depicted compounds. The claims are thereby rendered vague and indefinite.

Claim 4, in line 11, recites the language "reacting triacid", for which there is uncertain antecedent basis. Claim 4, in line 13, depict a hand drawing that shows an intersection of a straight line crossing an open bracket, "[", which renders the claim vague and indefinite, because it is capable of more than one meaning, namely that there is a carbon atom at (or prior) to the intersection, or the triple repeating unit is bound to the amine Nitrogen.

Claims 4 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: yielding dendrimer frameworks.

Claim 5, recites the language "wherein K is CO<sub>2</sub>Et or benzyl", for which there is uncertain antecedent basis because it is unclear whether the hand drawing depicts a "K".

Claim 5, in line 6, depict a hand drawing that shows an intersection of a straight line crossing an open bracket, "[", which renders the claim vague and indefinite, because it is capable of more than one meaning, namely that there is a carbon atom at (or prior) to the intersection, or not.

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Claim 5, in lines 9-10, recites the language "reducing to yield a core", which renders the claim vague and indefinite, because it is unclear as to what is being reduced.

Claim 5 recites the language "transforming to a mesylate and attaching to the core forms a first tier polyether dendrimer", which renders the claim vague and indefinite, because it is unclear what is transformed to a mesylate and what is attached to the core. Furthermore the term "forms" probably should be replaced with a different phrase, for example, "thereby forming".

Claim 5 recites depicts the term "R", but the claim does not define said term.

### ***Conclusion***

10. Claims 4 and 5 are rejected.

11. Claims 4 and 5 appear free of the prior art. The closest prior art of record, is that of Newkome et al., Chem. Commun., 1996, pp. 2737-2738, which teaches methods of making dendrimers comprising a monomer that is an aminotris (*tert*-butyl ester), but does not teach the chemical compounds depicted in claims 4 and 5.

12. The art made of record and not relied upon is considered related to applicant's disclosure:

a. Newkome, G. R. et al., Synthesis of Water-Soluble, Ester-Terminated Dendrons and Dendrimers Containing Internal PEG Linkages, Macromolecules (2004), Vol. 37, pp. 8262-8268.

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- b. Mishra A. et al., Synthesis, spectroscopic and electrochemical investigation of some new stilbazolium dyes, Dyes and Pigments (2003), Vol. 58, pp. 227-237.

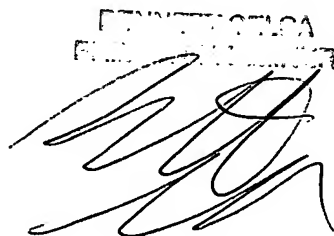
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark L. Shibuya whose telephone number is (571) 272-0806. The examiner can normally be reached on M-F, 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on (571) 272-0811. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mark L. Shibuya  
Examiner  
Art Unit 1639

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Handwritten signature of Mark L. Shibuya, Examiner, Art Unit 1639.